Intussusception in Adults

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INTUSSUSCEPTION of the adult intestinal tract is an unusual condition and varies considerably from the more common occurrence of this disorder in infants and children. This report describes our experience with 34 cases of adult intussusception observed over the period 1932–1968 at The New York Hospital-Cornell Medical Center.

Clinical Material

Intussusception is generally classified according to location and this has been done in various ways in the literature. We have followed the approach of Dean, Ellis, and Sauer[4] who divide the lesion into four common types. They are: 1) enteric (small bowel invaginating into small bowel), 2) ileocecal (the ileocecal valve being the leading point of the intussusception), 3) ileocolic (ileum protruding through the ileocecal valve with the cecum remaining stationary), 4) colocolic (colon invaginating into colon). Table 1 summarizes the sites of intussusception found in our 34 cases.

In contrast to infants and children, adult intussusception is usually caused by an organic lesion,[7-10] although there is a significant number of so-called idiopathic cases. Both benign and malignant neoplasms are amongst the variety of tumors that cause intussusception. Table 2 summarizes the various lesions found in the 34 cases.

Of note from these figures is the preponderance of malignant tumors accounting for large bowel intussusceptions (six of nine cases) and the rarity of malignant neoplasms in small bowel intussusceptions (four of 25 cases). In contrast, benign neoplasms accounted for 15 of 25 instances of small bowel intussusception and for only two of nine large bowel intussusceptions. In addition, the so-called idiopathic type was involved in only one of nine large bowel intussusceptions, but was found in six of the 25 small bowel cases.

Age and Sex. There were 14 males and 20 females in this series. No difference was found between the sexes as regards type of intussusception or etiological factors. An even distribution of cases is seen throughout all age groups (Table 3). However, there were only three instances of malignant tumors amongst 24 cases in the 20–60 age group, but seven malignant tumors in ten cases of the 60–80 age group.

Symptoms

The symptoms of intussusception varied considerably (Table 4). As would be expected, signs and symptoms of bowel obstruction predominated, and the most common cause for operation was acute bowel obstruction. Constipation was a common complaint amongst patients with colonic lesions where colo-colic intussusception occurred, whereas weight loss and diarrhea was common with ileocecal intussusception. There was only one instance of a currant jelly stool being passed, a common sign in intussusception of childhood, and

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TABLE 1. *Types of Intussusception*

Types	No. of Cases	%
Enteric: a) jejunojejunal	4	
b) ileoileal	8	
	12	35
Ileocecal	5	15
Ileocolic	13	38
Colocolic	4	12
Total	34	100

bleeding was only once the predominant symptom that led to operation.

In retrospect, it was possible to trace symptoms back for a considerable period, and the duration of symptoms is enumerated in Table 5. The longest period of symptoms was associated with malignant tumors, but seven patients with benign tumors had symptoms for 2 months or more. The signs of intussusception are listed in Table 6. All of these signs are non-specific and do not make a definitive diagnosis of intussusception possible. A mass was palpated in only one of every four patients. The presence of a mass associated with bowel obstruction most often led to the diagnosis of a tumor causing obstruction, although it really was the whole intussusception that was palpated, rather than the tumor causing it.

Laboratory examinations were of little help in arriving at a diagnosis. The white blood count was elevated in about half the cases; the same number had occult blood in the stools. Radiographic examination usually showed some degree of obstruction, but only four times was the intussusception demonstrated by barium studies (Fig. 1).

Treatment

All the patients in this series underwent operation, save one whose colo-colic intussusception was reduced by proctoscopy. The types of operative procedures used are enumerated in Table 7.

TABLE 2. *Etiological Factors in Intussusception*

Small Bowel		Large Bowel		Total
Benign Tumors:				
Lipoma	7	Adenomatous polyp	1	8
Adenomatous polyp	2	Leiomyoma	1	3
Hemangioma	2			2
Neurofibroma	1			1
Carcinoid	1			1
Leiomyoma	1			1
Subtotal	14		2	16
Malignant Tumors:				
Carcinoma	2	Carcinoma cecum	5	7
Leiomyosarcoma	1	Carcinoma transverse colon	1	2
Lymphosarcoma	1		0	1
Subtotal	4		6	10
Idiopathic	6		1	7
Miscellaneous TBC adenitis	1		0	1
Total	25		9	34

TABLE 3. *Ages of Patients*

Ages	No. of Cases
20–30	4
30–40	5
40–50	8
50–60	7
60–70	6
70–80	4
Total	34

TABLE 4. *Symptoms of Intussusception*

Symptoms	No. of Cases	%
Pain	31	89
Nausea	28	82
Vomiting	25	74
Weight loss	17	50
Diarrhea	14	41
Constipation	10	29
Melena	10	29

TABLE 5. *Duration of Symptoms Before Treatment of Intussusception*

Time	Idiopathic	Benign Tumor	Malignant Tumor	Total
3 months or more	1	4	6	11
2 months	0	3	1	4
1 month	1	1	2	4
2 weeks	1	1	0	2
3–7 days	1	5	0	6
1–2 days	4	2	1	7
Total	8	16	10	34

TABLE 6. *Signs of Intussusception*

Sign	No. of Cases	%
Tenderness	24	71
Distention	19	56
Fever	14	41
Mass	8	24

Resection with or without reduction was the procedure most frequently employed. This was done in the many instances where manual reduction was not possible at the time of operation, where the viability of the bowel was compromised, and where malignant tumors were present.

Reduction alone was done in idiopathic cases. Reduction with local excision was done twice for benign tumors. A bypass was added to reduction once, when swelling seemed to compromise the bowel lumen, and a cecostomy was added once, in an ileocecal intussusception.

Operative mortality was nil, and postoperative complications few, surprising in

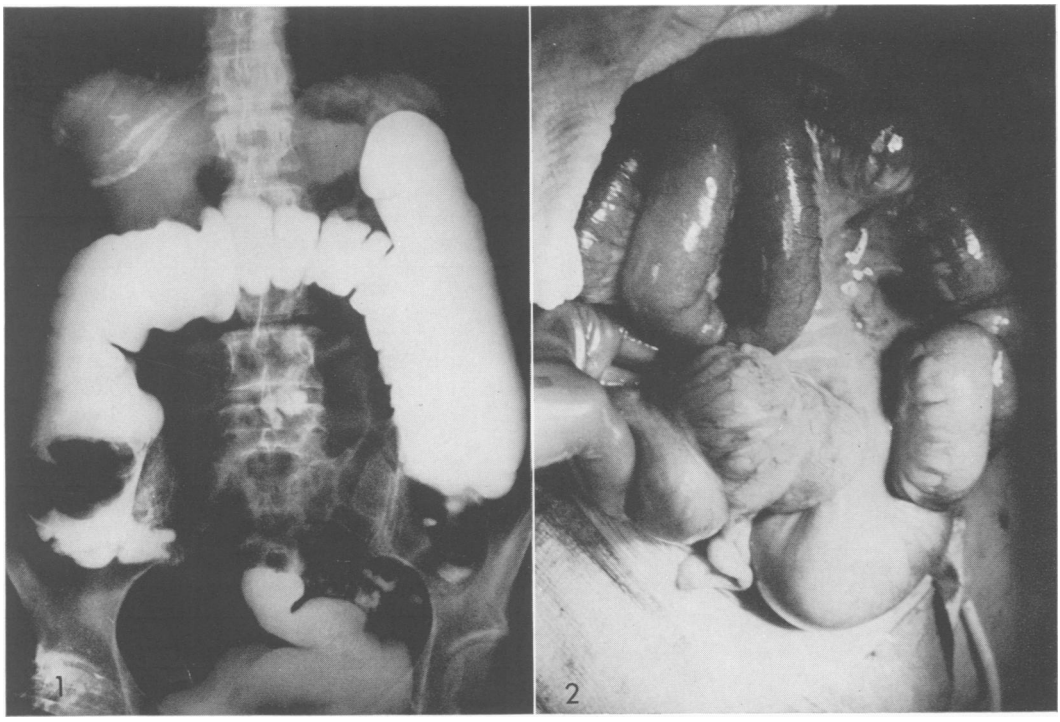

FIG. 1. Barium enema x-ray shows a filling defect in the cecum representing an ileocolic intussusception. Intermittent symptoms of bowel obstruction and a normal barium enema x-ray 3 months previously helped make the diagnosis.

FIG. 2. Same patient as described in Figure 1. The picture taken during operation shows the small bowel entering the cecum, which is stationary, as evidenced by the appendix visualized in the lower field.

view of the fact that most operations were emergency procedures, allowing little time for cleansing of the bowel. There was no instance of a major wound infection. There were two instances of pneumonia and one of phlebothrombosis. As indicated in Table 7, one patient was reoperated upon three days following reduction, at which time, the bowel involved in the intussusception was gangrenous, necessitating resection.

TABLE 7. *Operative Procedures for Intussusception*

Procedure	No. of Cases	%
Resection	16	47
Reduction and resection	8	23
Reduction	5*	15
Reduction and local excision	2	6
Reduction and bypass	1	3
Reduction and cecostomy	1	3
Reduction via proctoscope	1	3
Total	34	100

* One case required resection three days following reduction.

Results of Treatment

All the patients survived operation, and there has been no recurrence of intussusception in the group.

As regards the ten patients with malignant tumors, three have been lost to follow-up. One with lymphosarcoma died one year following operation, from disseminated lymphoma. Six patients with carcinoma are living and well from 2 to 10 years following operation.

The patients with cancers and intussusception are few, but the good results as regards the tumor may be explained by the fact that distant metastases or regional lymph node metastases were not found at operation, which may reflect earlier removal caused by the intussusception.

Discussion

Intussusception in adults is rare, about five per cent of all intussusceptions,[1-3, 6] the rest being in infants and children.[9] Most institutions, therefore, have a limited experience with this condition. There are several reported series in the literature and Brayton and Norris[1] summarized the world's literature up to 1954 with a collection of 748 cases. Although intussusception may occur anywhere in the gastrointestinal tract, over 90 per cent occur in the small and large bowel. The remaining instances are gastroduodenal and stomal intussuscep-

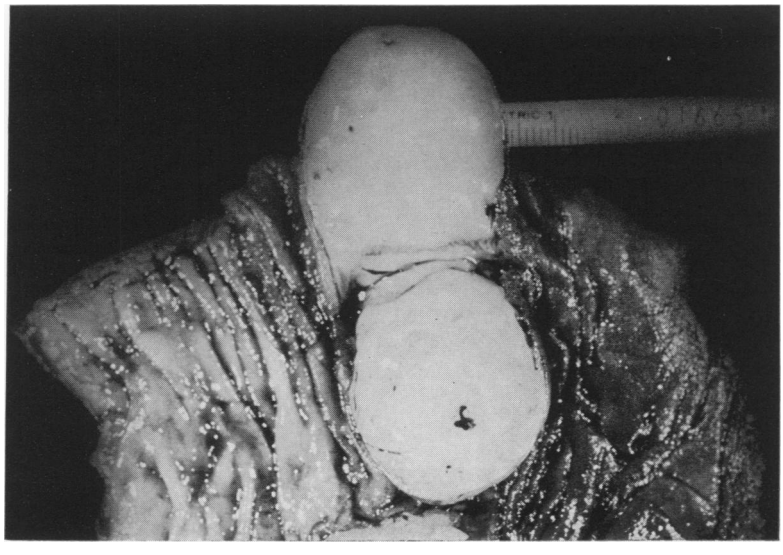

FIG. 3. The cause of the intussusception shown in Figures 1–2 was a neurofibroma of the terminal ileum, here shown in cross-section.

tions. Intussusception usually is antegrade, but has been reported to be retrograde.[5]

The mechanism of production of intussusception is usually a proximal area of contraction invaginating into a distal area of relaxation. With some organic lesion in the bowel, there is a focus to be pulled ahead by the peristaltic wave into the distal segment of relaxed bowel. Once the bowel has become intussuscepted, edema follows and the area may become irreducible and continue on to necrosis and gangrene, if not treated.

Figures from our series and from the literature show a high incidence of both benign and malignant tumors[8] as etiological agents of adult intussusception and emphasizes the need for surgical intervention. Most often, operations are emergencies and preparation of the bowel is not available. Fortunately, it is most often either small bowel or right side of the colon that requires resection, rather than the more hazardous left side of the colon. Reduction should be attempted and, if possible, the causative factor should then be removed by excision or segmental resection. At the same time, a search should be made for gangrenous areas of the bowel which should be treated appropriately. Should reduction not be feasible, resection of the involved area should be performed and end to end anastomosis carried out. Results are usually satisfactory, since the causative factor has been removed. Should a malignant tumor be the cause of intussusception, removal by resection of the lesion should include regional lymphnodes. Results with a small number of patients indicate a favorable outlook in these cases.

Summary

Experience at The New York Hospital-Cornell Medical Center with 34 cases of adult intussusception is reviewed.

In this series amongst causative factors there were 16 benign neoplasms, 10 malignant tumors, and 7 idiopathic.

Malignant neoplasms were more common in colonic intussusceptions and amongst older patients, benign neoplasms and the idiopathic type were more prevalent in small bowel.

The main symptoms were crampy pain, nausea, and vomiting. Many patients, however, had other symptoms which often had been present for months before the diagnosis was established.

All cases, except one, were treated surgically, most often by reduction or resection or both, with no operative mortality.

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